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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,387	KIM ET AL.	
	Examiner	Art Unit	
	Albert H. Cutler	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to Applicant's response of September 21, 2007.

Response to Arguments

2. Applicant's arguments, see pages 12 and 13, filed September 21, 2007, with respect to the rejection(s) of claim(s) 1-32 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Park(US 2001/0036845).

Claim Objections

3. Claim 20 is objected to because of the following informalities: Lack of clarity and precision. Claims 20 recites, "another **FCP** electrically connected between the image capture device **PCG amd** the connector unit". Please change claim 20 to read, "another **FPC** electrically connected between the image capture device **PCB and** the connector unit". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-9, 23, 27/23, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Rinaldi et al.(US Patent Application Publication 2003/0057430) and Park(US 2001/0036845).

Consider claim 1, Kuroda teaches:

A camera module("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit("camera module", 6, figure 7) for focusing an image of a subject("suitable for close range photography" paragraph 0034);

a light emitting unit("flash", 12, figures 6 and 7) for emitting light to the subject("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a first FPC (flexible printed circuit)("flexible printed circuit board", 16, paragraph 0036, figure 7) electrically connected between the image capture device unit and the light emitting unit(see figure 7, "the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing(1a)" paragraph 0036, The flash is mounted on the main printed circuit board(14).);

a connector unit("connector(15)", paragraph 0036, figure 7) for applying an electric signal to the image capture device unit(6, figure 7).

However, Kuroda does not explicitly teach that the light emitting unit is an LED.

Like Kuroda, Rinaldi et al. teaches of imaging(paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards(paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer(paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

However, the combination of Kuroda and Rinaldi et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that another FPC is electrically connected between the image capture device unit and the connector unit.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda and Rinaldi et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by the combination of Kuroda and Rinaldi for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

Consider claim 2, and as applied to claim 1 above, Kuroda further teaches that the image capture device unit(6) comprises a housing(see figure 7), a camera lens(6a) disposed to the upper part of the housing for focusing the image of the subject(See figure 7, paragraph 0036), and an image capture device PCB(13) adapted for supporting the housing(figure 7, paragraphs 0036 and 0037).

However, the combination of Kuroda and Rinaldi et al. does not explicitly teach that the housing has a space defined therein, or that the PCB has an image sensor for capturing an image of the subject mounted to the middle upper surface thereof.

Park teaches that the housing has a space defined therein(paragraph 0026), and that the PCB(406) has an image sensor("CCD") for capturing an image of the subject mounted to the middle upper surface thereof(paragraph 0029, figure 3).

Consider claim 3, and as applied to claim 1 above, Kuroda teaches:

The light emitting unit(12, figures 6 and 7) comprises:

A light emitting unit PCB("main printed circuit board", 14, figure 7) formed so that the light emitting unit(12) is mounted thereon(see figure 7). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

Consider claim 4, and as applied to claim 3 above, Kuroda teaches that the light emitting unit(12) is attached to the light emitting unit PCB(14) upside down(see figure 7). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

Consider claim 5 and as applied to claim 1 above, Kuroda teaches that the light emitting unit(12) is mounted on the housing of the image capture device(6)("the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing 1a, via a flexible printed circuit board(16)", paragraph 0036. The light emitting unit(12) is mounted on same PCB(14) that connector(15), connected to the housing of the image capture device(6), is mounted on. Therefore, the light emitting unit(12) is mounted on the housing of image capture device(6).). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

Consider claim 6, and as applied to claim 1 above, Kuroda further teaches that the light emitting unit(12) further comprises a retainer("flash window", 17, figure 7, paragraph 0038) for guiding the light emitted("the flash(12) is exposed through a flash window(17)" paragraph 0038) from the light emitting unit(12). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

Consider claim 7 and as applied to claim 1 above, Kuroda teaches of an image capture device unit(6) connected to a light emitting unit(12) via a first FPC(16). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

The combined invention of Kuroda, Rinaldi et al. and Park does not explicitly teach that the image capture device unit and the LED are electrically connected to the first FPC, respectively, via a flexible cable connector.

However, **Official Notice** (MPEP § 2144.03) is taken that both the concepts and advantages of using a flexible cable connector to connect circuit boards are well known and expected in the art. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use a flexible cable connector to connect the LED PCB and image capture device unit to the first FPC as taught by the combination of Kuroda, Rinaldi et al. and Park for the benefit of providing electrically-efficient connections with the flexibility that contacts that can be easily removed from the wiring side when necessary for maintenance and repair.

It should be noted that the common knowledge of the old and well-known statements made by the Examiner with regards to claim 7 **is taken as admitted prior art** because Applicant failed to seasonably traverse this common knowledge from the amendment filed on April 30, 2007. See MPEP § 2144.03. In re Chevenard, 60 USPQ 239 (CCPA 1943).

Consider claim 8, and as applied to claim 1 above, Kuroda teaches of an image capture device unit(6) connected to a light emitting unit(12) via a first FPC(16). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

The combined invention of Kuroda, Rinaldi et al. and Park does not explicitly teach that the image capture device unit and the LED are electrically connected to the first FPC, respectively, by soldering.

However, **Official Notice** (MPEP § 2144.03) is taken that both the concepts and advantages of using soldering to connect circuit boards are well known and expected in the art. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use soldering to connect the LED PCB and image capture device unit to the first FPC as taught by the combination of Kuroda, Rinaldi et al. and Park for the benefit of being able to use much smaller component connections, allowing much higher circuit densities, achieving a high degree of automation, reducing labor cost and greatly increasing production rates.

It should be noted that the common knowledge of the old and well-known statements made by the Examiner with regards to claim 8 **is taken as admitted prior art** because Applicant failed to seasonably traverse this common knowledge from the amendment filed on April 30, 2007. See MPEP § 2144.03. In re Chevenard, 60 USPQ 239 (CCPA 1943).

Consider claim 9, and as applied to claim 1 above, Kuroda teaches of an image capture device unit(6) connected to a light emitting unit(12) via a first FPC(16). Rinaldi et al. teaches that the light emitting unit is an LED(see claim 1 rationale).

The combined invention of Kuroda, Rinaldi et al. and Park does not explicitly teach that the image capture device unit and the LED are electrically connected to the

first FPC, respectively, by means of anisotropic conductive film, anisotropic conductive paste, or adhesive resin.

However, **Official Notice** (MPEP § 2144.03) is taken that both the concepts and advantages of using anisotropic conductive film to connect circuit boards are well known and expected in the art. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use anisotropic conductive film to connect the LED PCB and image capture device unit to the first FPC as taught by the combination of Kuroda, Rinaldi et al. and Park for the benefit of minimizing space requirements, replacing solder with a lead-free solution, and reducing costs by replacing cable connectors.

It should be noted that the common knowledge of the old and well-known statements made by the Examiner with regards to claim 9 **is taken as admitted prior art** because Applicant failed to seasonably traverse this common knowledge from the amendment filed on April 30, 2007. See MPEP § 2144.03. In re Chevenard, 60 USPQ 239 (CCPA 1943).

Consider claim 23, Kuroda teaches:

A camera module(6, figures 6 and 7) for mobile communication terminals(1), comprising:

a housing(see figure 7, paragraph 0036);

a camera lens(6a) disposed to the upper part of the housing(6) for focusing an image of a subject;

a PCB(13) adapted for supporting the housing(6);

at least one light emitting unit(12) disposed on the PCB(see figure 7, There is no distinguishable space between PCB(13) and PCB(14). Therefore it is reasonable that the two PCBs are integrated as one large PCB with two parts.) outside the housing(6, see figure 7) for emitting light to the subject("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

and a connector unit(15) for applying an electric signal to the PCB(13).

However, Kuroda does not explicitly teach that the housing has a space defined therein, or that the PCB has an image sensor for capturing the image of the subject mounted to the middle upper surface thereof, or that the light emitting unit is an LED.

Like Kuroda, Rinaldi et al. teaches of imaging(paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards(paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer(paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and

good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

However, the combination of Kuroda and Rinaldi et al. does not explicitly teach that the image capture device(6) contains an image sensor, that the connector unit is installed on a motherboard, or that an FPC is electrically connected between the PCB and the connector unit.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda and Rinaldi et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030). Park further teaches that the PCB(406) has an image sensor("CCD") for capturing an image of the subject mounted to the middle upper surface thereof(paragraph 0029, figure 3), and that the housing has a space defined therein(paragraph 0026).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include an FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by the combination Kuroda and Rinaldi et al., for the benefit that having the image capture device connected to the

motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control. Furthermore, it would have been obvious to a person having ordinary skill in the art at the time of the invention have an image sensor taught by Park mounted to the upper middle surface of the image capture PCB taught by Kuroda for the benefit that the image capture PCB would provide stability and enable efficient image capture by keeping the image sensor in line with the light directed from the lens.

Consider claim 27 and as applied to claim 23 above Kuroda does not explicitly teach that the LED is an SMD LED.

However, Rinaldi et al. teaches that the LED is an SMD-LED(see paragraph 0021, figure 5B).

Consider claim 31, and as applied to claim 23 above, the combination of Kuroda and Rinaldi et al. does not explicitly teach a motherboard.

However, Park teaches at least one of said mobile communication terminals(figures 1-3) includes said motherboard(120, figure 3) and wherein said connector end connected to said PCB and another end connected to said motherboard(See figure 3. One end of the FPC(410) is connected to the PCB(406), and the other end(121) is connected to the motherboard(120).).

Consider claim 32, Kuroda teaches:

A camera module("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit("camera module", 6, figure 7) for focusing an image of a subject("suitable for close range photography" paragraph 0034);

a light emitting unit("flash", 12, figures 6 and 7) for emitting light to the subject("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a first FPC (flexible printed circuit)("flexible printed circuit board", 16, paragraph 0036, figure 7) electrically connected between the image capture device unit and the light emitting unit(see figure 7, "the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing(1a)" paragraph 0036, The flash is mounted on the main printed circuit board(14).);

a connector unit("connector(15)", paragraph 0036, figure 7) for applying an electric signal to the image capture device unit(6, figure 7).

However, Kuroda does not explicitly teach that the light emitting unit is an LED.

Like Kuroda, Rinaldi et al. teaches of imaging(paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards(paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer(paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

However, the combination of Kuroda and Rinaldi et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that another FPC is electrically connected between the image capture device unit and the connector unit.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda and Rinaldi et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and

include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by the combination of Kuroda and Rinaldi for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

7. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Rinaldi et al.(US Patent Application Publication 2003/0057430), Yamada et al.(US Patent Application Publication 2001/0050717) and Park(US 2001/0036845).

Consider claim 10, Kuroda teaches:

A camera module("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit("camera module", 6, figure 7) for focusing an image of a subject("suitable for close range photography" paragraph 0034);

a light emitting unit("flash", 12, figures 6 and 7) for emitting light to the subject("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a FPC("flexible printed circuit board", 16, paragraph 0036, figure 7) including a first part(13) formed so that the image capture device(6) unit is mounted thereon(see figure 7, paragraph 0036), a second part(14) formed so that the light emitting unit(12) is mounted thereon(see figure 7), and a connection part(15) for electrically connecting the first part(13) and the second part(14), the first part(13) and the second part(14) being integrally formed with the connection part(15) (see figure 7, "the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing(1a)" paragraph 0036, The flash is mounted on the main printed circuit board(14).); and

a connector unit("connector(15)", paragraph 0036, figure 7) for applying an electric signal to the FPC(16)(The connector(15) attaches the FPC(16) to the main PCB(14) which supplies electric signals.)

However, Kuroda does not explicitly teach that the light emitting unit is an LED, or that the image capture device and LED are directly mounted on flexible printed circuits.

Like Kuroda, Rinaldi et al. teaches of imaging(paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards(paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer(paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

Yamada et al. teaches of a camera device having a similar structure to that taught by Kuroda(see figure 1, paragraph 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector(8) for connecting the imaging device to a motherboard(7). Yamada et al. also teaches of the use of a flexible printed circuit("flexible wiring board", 5, figure 1) for connecting a camera module("CMOS Camera", 20, figure 1). The device of Yamada et al. also contains a lens(2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

In addition to the teachings of Kuroda, Yamada et al. explicitly teaches of mounting components directly on an FPC. In the eleventh embodiment of the disclosed invention, paragraphs 0093-0099, figure 11, Yamada et al. teaches that an image pick-up semiconductor(4) and image processing semiconductor(9) are mounted on a flexible wiring board(5). The reason that one is motivated to mount components directly on the an FPC is that a more compact and less costly device is created(Yamada et al., paragraph 0099).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to mount the image capture device and light emitting unit taught by Kuroda directly on the FPC as taught by Yamada et al. because mounting components directly on an FPC provides the benefit of removing the rigid wiring board connected to the FPC and thus producing a device which can be made more compact to a greater extent and made much less costly(paragraph 0099).

However, the combination of Kuroda, Rinaldi et al. and Yamada et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that a portion of FPC is electrically connected between the image capture device unit and the connector unit on the motherboard.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda, Rinaldi et al., and Yamada et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a portion of the FPC for connecting to the connector as taught by Park wherein the portion of the FPC is connected to the image capture device taught by the

combination of Kuroda, Rinaldi et al., and Yamada et al. for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

Consider claim 11, and as applied to claim 10 above, Kuroda teaches:

the image capture device unit(6) comprises:

a housing(see figure 7, paragraph 0036) supported by the first part(13);

a camera lens(6a) disposed to the upper part of the housing(see figure 7) for focusing the image of the subject;

However, Kuroda does not explicitly teach that the housing has a space defined therein, that the image capture device is mounted directly on the FCB, or that the image capture device has an image sensor mounted directly on the FCB.

Yamada et al. teaches that the housing(20, figure 11) has a space defined therein("image pick-up opening", 22, figure 2, This area is also shown, although not labeled, in figure 11.), that the image capture device(20) is mounted directly on the FCB(see claim 10 rationale), and the image capture device(20) has an image sensor(4) mounted directly on the FCB(see claim 10 rationale, figure 11, paragraph 0094).

Consider claim 12, and as applied to claim 10 above, Kuroda further teaches that the light emitting unit(12) is attached to the light emitting unit PCB(14) upside down(see figure 7).

Consider claim 13, and as applied to claim 10 above, Kuroda further teaches that the light emitting unit(12) is mounted on the housing of the image capture device(6)("the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing(1a), via a flexible printed circuit board(16)", paragraph 0036. The light emitting unit(12) is mounted on same PCB(14) that connector(15), connected to the housing of the image capture device(6), is mounted on. Therefore, the light emitting unit(12) is mounted on the housing of image capture device(6).)

Consider claim 14 and as applied to claim 10 above, Kuroda further teaches that the light emitting unit(12) further comprises a retainer("flash window", 17, figure 7, paragraph 0038) for guiding the light emitted("the flash(12) is exposed through a flash window(17)" paragraph 0038) from the light emitting unit(12).

8. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Rinaldi et al.(US

Patent Application Publication 2003/0057430), Cibulsky et al.(US Patent 5,378,306), and Park(US 2001/0036845).

Consider claim 15, Kuroda teaches:

A camera module("upper casing", 1a, figures 6 and 7, paragraphs 34-44) for mobile communication terminals("mobile phone main unit", 1, paragraph 0033), comprising:

an image capture device unit("camera module", 6, figure 7) for focusing an image of a subject("suitable for close range photography" paragraph 0034);

a light emitting unit("flash", 12, figures 6 and 7) for emitting light to the subject("having a strong illumination function so as to allow photography in a dark place" paragraph 0035);

a connection unit including a first rigid part(13) formed so that the image capture device unit(6) is mounted thereon(see figure 7), a second rigid part(14) formed so that the LED(12) is mounted thereon(see figure 7), and a flexible connection part(16) for electrically connecting the first rigid part(13) and the second rigid part(14) (see figure 7, "the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing(1a)" paragraph 0036, The flash is mounted on the main printed circuit board(14).);

and a connector unit("connector(15)", paragraph 0036, figure 7) for applying an electric signal to the circuit board(6, figure 7).

However, Kuroda does not explicitly teach that the light emitting unit(12) is an LED, or that image capture device PCB(13), LED PCB(14), and FPC(16) are integrated as a rigid-flexible PCB.

Like Kuroda, Rinaldi et al. teaches of imaging(paragraph 0005). Rinaldi et al. also teaches of using printed circuit boards(paragraph 0004). Rinaldi et al. teaches of a method for fabrication of SMD-LED's on a wafer(paragraphs 0023-0025). In figures 5A and 5B, paragraph 0025, Rinaldi et al. teaches of LED's connected to a printed circuit board.

In addition to the teachings of Kuroda, Rinaldi et al. teaches that LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use an LED as taught by Rinaldi et al. as the flash device in the camera module taught by Kuroda because LED's are extremely versatile and good for displaying images due to the fact that they can be relatively small and don't burn out(Rinaldi et al., paragraph 0005)

Like Kuroda, Cibulski et al. teaches of making circuits for small electronic packages(column 6, lines 46-50). Cibulski et al. teaches that due to the increasing complexity of electronic devices, meeting high performance requirements along with minimum space and weight requirements can be quite a task(column 1, lines 27-33). Therefore, Cibulski et al. teaches a method of producing a rigid-flexible circuit

board(column 3, line 46 through column 6, line 27) that overcomes the deficiencies in current circuit boards.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a rigid-flexible PCB as taught by Cibulski et al. to integrate the image capture device PCB(13), LED PCB(14), and FPC(16) as taught by the combination of Kuroda and Rinaldi et al. because using a rigid-flexible PCB provides the benefit of meeting the performance, space, and weight requirements of increasingly complex electrical circuits(Cibulski et al., column 1, lines 24-36).

However, the combination of Kuroda, Rinaldi et al., and Cibulski et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that another FPC is electrically connected between the image capture device unit and the connector unit.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda, Rinaldi et al., and Cibulski et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and

include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by the combination of Kuroda, Rinaldi et al., and Cibulski et al. for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

Consider claim 16, and as applied to claim 15 above, Kuroda teaches:

the image capture device unit(6) comprises:

a housing(see figure 7, paragraph 0036) supported by the first rigid part(13);

a camera lens(6a) disposed to the upper part of the housing(see figure 7) for focusing the image of the subject;

However, the combination of Kuroda, Rinaldi et al., and Cibulsky et al. does not explicitly teach that the housing has a space defined therein, or that the image capture device has an image sensor mounted on the first rigid part(13).

Park teaches that the housing has a space defined therein(paragraph 0026), and that the PCB(406) has an image sensor("CCD") for capturing an image of the subject mounted to the middle upper surface thereof(paragraph 0029, figure 3).

Consider claim 17 and as applied to claim 15 above, Kuroda further teaches that the light emitting unit(12) is attached to the light emitting unit PCB(14) upside down(see figure 7).

Consider claim 18, and as applied to claim 15 above, Kuroda further teaches that the light emitting unit(12) is mounted on the housing of the image capture device unit(6)("the close-range camera module(6) is connected to a connector(15) mounted on a main printed circuit board(14) inside the upper casing(1a), via a flexible printed circuit board(16)", paragraph 0036. The light emitting unit(12) is mounted on same PCB(14) that connector(15), connected to the housing of the image capture device(6), is mounted on. Therefore, the light emitting unit(12) is mounted on the housing of image capture device(6).)

Consider claim 19 and as applied to claim 15 above, Kuroda further teaches that the light emitting unit(12) further comprises a retainer("flash window", 17, figure 7, paragraph 0038) for guiding the light emitted("the flash(12) is exposed through a flash window(17)" paragraph 0038) from the light emitting unit(12).

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Park(US 2001/0036845).

Consider claim 20, Kuroda teaches:

A camera module(1a) for mobile communication terminals(1), comprising:

an image capture device PCB(13, figure 7);

a first FPC(16) connected to the image capture device PCB(13);

at least one part-mounting PCB(14) electrically connected to the image capture device PCB(13) via the first FPC(16);

at least one mobile communication terminal part("flash", 12, paragraph 0038) mounted on the part-mounting PCB(14)(see figure 7);

and a connector unit(15, paragraph 0036) for applying an electric signal to the image capture device PCB(13).

However, Kuroda does not explicitly teach that the camera module comprises and image sensor for capturing an image of a subject mounted on the upper surface thereof, that a connector unit is installed in a motherboard, or of another FPC electrically connected between the image capture device PCB and the connector unit.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda, Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030). Park further teaches that the PCB(406) has an image sensor("CCD") for capturing an

image of the subject mounted to the middle upper surface thereof(paragraph 0029, figure 3).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by Kuroda, for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control. Furthermore, it would have been obvious to a person having ordinary skill in the art at the time of the invention have an image sensor taught by Park mounted to the upper middle surface of the image capture PCB taught by Kuroda for the benefit that the image capture PCB would provide stability and enable efficient image capture by keeping the image sensor in line with the light directed from the lens.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Yamada et al.(US Patent Application Publication 2001/0050717) and Park(US 2001/0036845).

Consider claim 21, Kuroda teaches:

A camera module(1a) for mobile communication terminals(1), comprising:

at least one mobile communication terminal part("flash", 12, paragraph 0038);

a connection unit including a first part(13) formed so that the image capture device(6) is mounted thereon(see figure 7), at least one second part(14) formed so that the mobile communication terminal part(12) is mounted thereon(see figure 7), and at least one connection part(16) for electrically connecting the first part(13) and the second part(14)(see paragraph 0036);

and a connector unit(15) for applying an electric signal to the FPC(16).

Yamada et al. teaches of a camera device having a similar structure to that taught by Kuroda(see figure 1, paragraphs 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector(8) for connecting the imaging device to a motherboard(7). Yamada et al. also teaches of the use of a flexible printed circuit("flexible wiring board", 5, figure 1) for connecting a camera module("CMOS Camera", 20, figure 1). The device of Yamada et al. also contains a lens(2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

In addition to the teachings of Kuroda, Yamada et al. explicitly teaches of mounting components directly on an FPC. In the eleventh embodiment of the disclosed invention, paragraphs 0093-0099, figure 11, Yamada et al. teaches that an image pick-up semiconductor(4) and image processing semiconductor(9) are mounted on a flexible wiring board(5). Yamada et al. also teaches that the image capture device(20) has an image sensor(4) for capturing an image of a subject.The reason that one is motivated to mount components directly on the an FPC is that a more compact and less costly device is created(Yamada et al., paragraph 0099).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to mount the image capture device and light emitting unit taught by Kuroda directly on the FPC as taught by Yamada et al. because mounting components directly on an FPC provides the benefit of removing the rigid wiring board connected to the FPC and thus producing a device which can be made more compact to a greater extent and made much less costly(paragraph 0099).

However, the combination of Kuroda and Yamada et al. does not explicitly teach that the connector unit is installed in a motherboard of the mobile communication terminal, or that a portion of FPC is electrically connected between the image capture device unit and the connector unit on the motherboard.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda and Yamada et al., Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a portion of the FPC for connecting to the connector as taught by Park wherein the portion of the FPC is connected to the image capture device taught by the

combination of Kuroda and Yamada et al. for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by not necessitating a separate power supply, signal processor and shutter control.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Park(US 2001/0036845) and further in view of Cibulsky et al.(US Patent 5,378,306).

Consider claim 22, Kuroda teaches:

A camera module(1a, figure 6, figure 7) for mobile communication terminals(1), comprising:

at least one mobile communication terminal part(12);

a connection configuration including a first rigid part(13) formed so that the image capture device(6) is mounted thereon, at least one second rigid part(14) formed so that the mobile communication terminal part(12) is mounted thereon, and at least one flexible connection part(16) for electrically connecting the first rigid part(13) and the second rigid part(14);

and a connector unit(15) for applying an electric signal to the connection unit(paragraph 0036).

However, Kuroda does not explicitly teach that the image capture device(6) contains an image sensor, that the or that first rigid part(13), second rigid part(14), and FPC(16) are integrated as a rigid-flexible PCB, or that the connector unit is installed on a motherboard, or that an FPC is electrically connected between the PCB and the connector unit.

Park is similar to Kuroda in that Park teaches of a mobile communication terminal(figures 1-3) which includes an image capture device(40, paragraphs 0023-0030).

However, in addition to the teachings of Kuroda, Park teaches that a connector unit(121, figure 3) is installed in a motherboard(120) of the mobile communication terminal(paragraph 0030), and that an FPC(410) is electrically connected between the image capture device unit(40) and the connector unit(121, figure 3, paragraph 0030). Park further teaches that the PCB(406) has an image sensor("CCD") for capturing an image of the subject mounted to the middle upper surface thereof(paragraph 0029, figure 3), and that the housing has a space defined therein(paragraph 0026).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have a connector unit installed in a motherboard and include a second FPC for connecting to the connector as taught by Park wherein the second FPC is connected to the image capture device as taught by Kuroda, for the benefit that having the image capture device connected to the motherboard allows the image capture device to be controlled by keys which are also connected to the motherboard, and minimizes the number of parts and the amount of power needed by

not necessitating a separate power supply, signal processor and shutter control. Furthermore, it would have been obvious to a person having ordinary skill in the art at the time of the invention have an image sensor taught by Park mounted to the upper middle surface of the image capture PCB taught by Kuroda for the benefit that the image capture PCB would provide stability and enable efficient image capture by keeping the image sensor in line with the light directed from the lens.

Like Kuroda, Cibulski et al. teaches of making circuits for small electronic packages(column 6, lines 46-50). Cibulski et al. teaches that due to the increasing complexity of electronic devices, meeting high performance requirements along with minimum space and weight requirements can be quite a task(column 1, lines 27-33). Therefore, Cibulski et al. teaches a method of producing a rigid-flexible circuit board(column 3, line 46 through column 6, line 27) that overcomes the deficiencies in current circuit boards.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a rigid-flexible PCB as taught by Cibulski et al. to integrate the image capture device PCB(13), LED PCB(14), and FPC(16) taught by the combination of Kuroda and Park, because a rigid-flexible PCB provides the benefit of meeting the performance, space, and weight requirements of increasingly complex electrical circuits(Cibulsky et al. column 1, lines 24-36).

12. Claims 24, 27/24, 28, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of

Rinaldi et al.(US Patent Application Publication 2003/0057430) and further in view of Park(US 2001/0036845) as applied to claim 23 above, and further in view of Braithwaite(US Patent 6,540,392).

Consider claim 24 and as applied to claim 23 above, the combined invention of Kuroda, Rinaldi et al., and Park does not explicitly teach that the camera module further comprises an optical fiber provided around the LED for forwardly guiding light emitted from the LED.

Like Kuroda, Braithwaite teaches of an imaging system working in correlation with an illumination device(column 1, lines 11-16). Braithwaite addresses the problem of using the illuminator to focusing light efficiently(column 1, line 66 through column 2, line 6).

In addition to the teachings of Kuroda, Rinaldi et al., and Park, Braithwaite teaches of an optical fiber(48) provided around an LED(34) for forwardly guiding light emitted from the LED(34)(see column 4, lines 43-64). Braithwaite teaches of using the optical carrier(48) so that light can be routed to the outside of a video camera(column 4, lines 61-64).

Therefore it would have been obvious to a person having ordinary skill in the art a the time of invention to use an optical fiber(48) as taught by Braithwaite around the LED taught by the combined invention of Kuroda, Rinaldi et al., and Park for the benefit of being able to remotely place the LED within the housing of the camera unit and still

efficiently use the light produced by the LED for illumination outside of the camera(Braithwaite, column 4, lines 61-64).

Consider claim 27 and as applied to claim 24 above Kuroda does not explicitly teach that the LED is an SMD LED.

However, Rinaldi et al. teaches that the LED is an SMD-LED(see paragraph 0021, figure 5B).

Consider claim 28, and as applied to claim 24 above, the combined invention of Kuroda, Rinaldi et al., and Park does not explicitly teach:

the optical fiber is formed in the shape of a cylinder comprising a core part and a cladding part surrounding the core part, and

wherein the optical fiber has an open end and a closed end, whereby the optical fiber is fitted around the LED through the open end.

However, Braithwaite teaches:

the optical fiber(48) is formed in the shape of a cylinder(see figure 7) comprising a core part(48) and a cladding part("jacket", 46) surrounding the core part(see figure 7), and

wherein the optical fiber(48) has an open end(bottom end, figure 7) and a closed end(top end, figure 7), whereby the optical fiber(48) is fitted around the LED(34) through the open end(bottom end, A barrel(40) with a bore(42) drilled through is used to

encapsulate the optical fiber(48), as well as fit over the top of the LED(34), see figure 7, column 4, lines 43-64.)

Consider claim 29, and as applied to claim 28 above, the combined invention of Kuroda, Rinaldi et al., and Park does not explicitly teach that the optical fiber is coated with a flexible conduit tube for preventing any bending or damage to the optical fiber due to external imapact.

However, Braithwaite teaches that the optical fiber(48) is coated with a flexible conduit tube("jacket", 46) for preventing any bending or damage to the optical fiber due to external imapact(The jacket(46) would protect the optical fiber(48) as is well known in the art.).

Consider claim 30, and as applied to claim 28 above, the combined invention of Kuroda, Rinaldi et al., Park, and Braithwaite does not explicitly teach that the closed end of the optical fiber(48) is concave.

However, **Official Notice** (MPEP § 2144.03) is taken that both the concepts and advantages of using an optical fiber(48) with a concave closed end are well known and expected in the art. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use an optical fiber with a concave closed end as the optical fiber(48) taught by the combined invention of Kuroda, Rinaldi et al., Yamada et al., and Braithwaite for the benefit of spreading out those light rays that have been

refracted through it, and thus yielding a large coupling angle with a long working distance range compared to a flat-end, or convex-end fiber.

It should be noted that the common knowledge of the old and well-known statements made by the Examiner with regards to claim 30 **is taken as admitted prior art** because Applicant failed to seasonably traverse this common knowledge from the amendment filed on April 30, 2007. See MPEP § 2144.03. In re Chevenard, 60 USPQ 239 (CCPA 1943).

13. Claims 25/23 and 26/23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Rinaldi et al.(US Patent Application Publication 2003/0057430) and further in view of Park(US 2001/0036845) as applied to claim 23 above, and further in view of Yamada et al.(US 2001/0050717).

Consider claim 25 and as applied to claim 23 above, the combination of Kuroda, Rinaldi and Park does not explicitly teach:

an iris filter (IR filter) disposed in the space of the housing for controlling an amount of light of the image focused from the camera lens.

Yamada et al. teaches of a camera device having a similar structure to that taught by Kuroda(see figure 1, paragraphs 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector(8) for connecting the imaging device to a motherboard(7). Yamada et al. also teaches of the use of a flexible printed

circuit("flexible wiring board", 5, figure 1) for connecting a camera module("CMOS Camera", 20, figure 1). The device of Yamada et al. also contains a lens(2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

However, in addition to the teachings of Kuroda, Rinaldi et al. and Park, Yamada et al. teach:

an iris filter (IR filter)(24, figure 2, paragraph 0041) disposed in the space of the housing(20, see figure 2) for controlling an amount of light of the image focused from the camera lens(Filter(24) is an "infrared-ray cutting filter", paragraph 0041).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include and IR filter as taught by Yamada et al. in the space of the housing taught by the combination of Kuroda, Rinaldi et al., and Park for the benefit of blocking light rays of unwanted wavelengths and thus preventing image deterioration.

Consider claim 26 and as applied to claim 23 above, the combination of Kuroda, Rinaldi et al. and Park does not explicitly teach a lens holder, wherein the camera lens(6a) is attached to the housing via a lens holder.

Yamada et al. teaches of a camera device having a similar structure to that taught by Kuroda(see figure 1, paragraphs 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector(8) for connecting the imaging device to a motherboard(7). Yamada et al. also teaches of the use of a flexible printed circuit("flexible wiring board", 5, figure 1) for connecting a camera module("CMOS

Camera", 20, figure 1). The device of Yamada et al. also contains a lens(2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

However, in addition to the teachings of Kuroda, Rinaldi et al. and Park, Yamada et al. teach:

a lens holder, wherein the camera lens(2) is attached to the housing(20) via a lens holder(see figure 2, the lens(2) is supported by two supports(i.e. a lens holder) on the sides of the housing(20)).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a lens holder as taught by Yamada et al. to hold the lens taught by the combination of Kuroda, Rinaldi et al., and Park for the benefit that a holder would allow the accurate positioning of the lens over the sensor, thus ensuring that light is directed to the right area of the sensor.

14. Claims 25/24 and 26/24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda(US Patent Application Publication 2003/0036365) in view of Rinaldi et al.(US Patent Application Publication 2003/0057430), further in view of Park(US 2001/0036845), further in view of Braithwaite(US 6,540,392) as applied to claim 24 above, and further in view of Yamada et al.(US 2001/0050717).

Consider claim 25 and as applied to claim 24 above, the combination of Kuroda, Rinaldi et al., Park, and Braithwaite does not explicitly teach:

an iris filter (IR filter) disposed in the space of the housing for controlling an amount of light of the image focused from the camera lens.

Yamada et al. teaches of a camera device having a similar structure to that taught by Kuroda(see figure 1, paragraphs 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector(8) for connecting the imaging device to a motherboard(7). Yamada et al. also teaches of the use of a flexible printed circuit("flexible wiring board", 5, figure 1) for connecting a camera module("CMOS Camera", 20, figure 1). The device of Yamada et al. also contains a lens(2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

However, in addition to the teachings of Kuroda, Rinaldi et al., Park, and Braithwaite, Yamada et al. teach:

an iris filter (IR filter)(24, figure 2, paragraph 0041) disposed in the space of the housing(20, see figure 2) for controlling an amount of light of the image focused from the camera lens(Filter(24) is an "infrared-ray cutting filter", paragraph 0041).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include and IR filter as taught by Yamada et al. in the space of the housing taught by the combination of Kuroda, Rinaldi et al., Park, and Braithwaite for the benefit of blocking light rays of unwanted wavelengths and thus preventing image deterioration.

Consider claim 26 and as applied to claim 24 above, the combination of Kuroda, Rinaldi et al., Park and Braithewaite does not explicitly teach a lens holder, wherein the camera lens(6a) is attached to the housing via a lens holder.

Yamada et al. teaches of a camera device having a similar structure to that taught by Kuroda(see figure 1, paragraphs 0039-0044). Like Kuroda, the device of Yamada et al. contains a connector(8) for connecting the imaging device to a motherboard(7). Yamada et al. also teaches of the use of a flexible printed circuit("flexible wiring board", 5, figure 1) for connecting a camera module("CMOS Camera", 20, figure 1). The device of Yamada et al. also contains a lens(2, figures 1 and 2). Where Yamada et al. differs is that the use of a flash device is not taught.

However, in addition to the teachings of Kuroda, Rinaldi et al., Park and Braithwaite, Yamada et al. teach:

a lens holder, wherein the camera lens(2) is attached to the housing(20) via a lens holder(see figure 2, the lens(2) is supported by two supports(i.e. a lens holder) on the sides of the housing(20)).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a lens holder as taught by Yamada et al. to hold the lens taught by the combination of Kuroda, Rinaldi et al., Park, and Braithwaite for the benefit that a holder would allow the accurate positioning of the lens over the sensor, thus ensuring that light is directed to the right area of the sensor.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nishimura et al.(US 2003/0013484) teach of a mobile communication terminal(figure 10) with a camera(223) and flash(231, paragraphs 0099-0101).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert H. Cutler whose telephone number is (571)-270-1460. The examiner can normally be reached on Mon-Fri (7:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571)-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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